**Owner's Operator and Maintenance Manual**

# POWER TILT ONLY

## FOR PRONTO™ M71™ AND M91™ POWER WHEELCHAIRS

DEALER: THIS MANUAL MUST BE GIVEN TO THE USER OF THE WHEELCHAIR.

USER: BEFORE USING THIS WHEELCHAIR, READ THIS MANUAL AND SAVE FOR FUTURE REFERENCE.

INVACARE®

*Yes, you can.™*

# WARNING

**DO NOT OPERATE THIS EQUIPMENT WITHOUT FIRST READING AND UNDERSTANDING THIS MANUAL. IF YOU ARE UNABLE TO UNDERSTAND THE WARNINGS, CAUTIONS, AND INSTRUCTIONS, CONTACT A HEALTHCARE PROFESSIONAL, DEALER OR TECHNICAL PERSONNEL IF APPLICABLE BEFORE ATTEMPTING TO USE THIS EQUIPMENT - OTHERWISE INJURY OR DAMAGE MAY RESULT.**

**THE INITIAL SET UP OF THIS WHEELCHAIR MUST BE PERFORMED BY A QUALIFIED TECHNICIAN.**

**PROCEDURES OTHER THAN THOSE DESCRIBED IN THIS MANUAL MUST BE PERFORMED BY A QUALIFIED TECHNICIAN.**

SAVE THESE INSTRUCTIONS

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# SPECIAL NOTES

**WARNING/CAUTION notices as used in this manual apply to hazards or unsafe practices which could result in personal injury or property damage.**

## NOTICE

**THE INFORMATION CONTAINED IN THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE.**

**As a manufacturer of wheelchairs, Invacare endeavors to supply a wide variety of wheelchairs to meet many needs of the end user. However, final selection of the type of wheelchair to be used by an individual rests solely with the user and his/her healthcare professional capable of making such a selection.**

**WHEELCHAIR TIE-DOWN RESTRAINTS AND SEAT POSITIONING STRAPS**

**Invacare recommends that wheelchair users NOT be transported in vehicles of any kind while in wheelchairs. As of this date, the Department of Transportation has not approved any tie-down systems for transportation of a user while in a wheelchair, in a moving vehicle of any type.**

**It is Invacare's position that users of wheelchairs should be transferred into appropriate seating in vehicles for transportation and use be made of the restraints made available by the auto industry. Invacare cannot and does not recommend any wheelchair transportation systems.**

## WARNING

**THIS SEATING SYSTEM HAS BEEN CUSTOM DESIGNED AND WILL BE ASSEMBLED TO THE WHEELCHAIR BASE BEFORE DELIVERY TO THE USER. THE INFORMATION CONTAINED IN THIS MANUAL IS FOR MAINTAINING AND ADJUSTING THE SEATING SYSTEM. THERE ARE VERY FEW ADJUSTMENTS THAT CAN SAFELY BE MADE BY THE USER. IF THERE IS A PROCEDURE OR ADJUSTMENT THAT NEEDS TO BE PERFORMED ON THE SEATING SYSTEM THAT IS NOT IN THIS MANUAL, DO NOT PERFORM THAT PROCEDURE. HAVE THE SEATING SYSTEM SERVICED BY A QUALIFIED TECHNICIAN.**

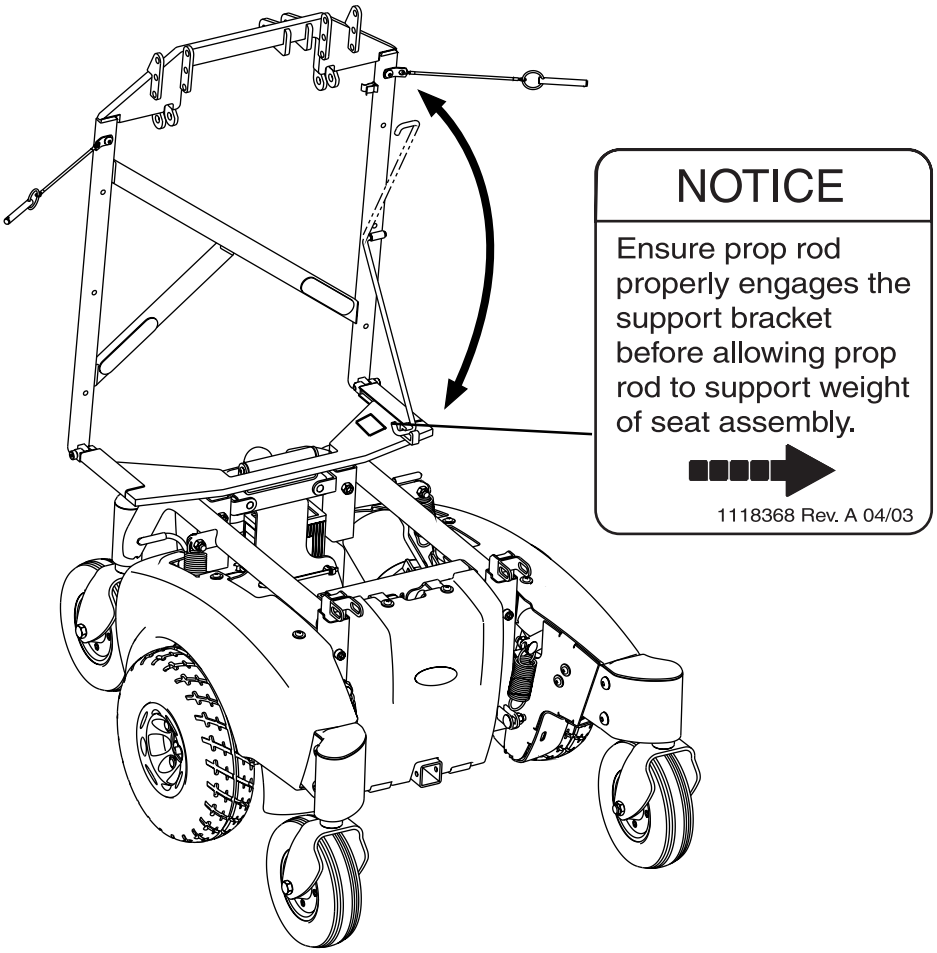
**The drive behavior initially experienced by the user may be different from other chairs previously used. This Power Wheelchair has Invacare's Sure Step technology, a feature that provides the chair with optimum traction and stability when driving forward over transitions and thresholds of up to 2-inches for the M71 and 3-inches for the M91. The following warnings apply specifically to the Sure Step Feature.**

- **Do not use on inclines greater than 9°.**
- **Do not use on inclines with wet, slippery, icy or oily surfaces. This may include certain painted or otherwise treated wood surfaces.**
- **Do not traverse down ramps at high speed. Doing so will reduce traction and increase stopping distance.**
- **The end user's weight can materially affect traction on sloped surfaces. Great care should be taken when traversing such slopes.**

**To determine and establish your particular safety limits, practice use of this product on various sloping surfaces in the presence of a qualified healthcare provider BEFORE attempting active use of this wheelchair. Other general warnings listed within this document also apply.**

# LABEL LOCATIONS





# SPECIFICATIONS

*NOTE: Refer to the wheelchair owner's manual for complete specifications on base and operation.*

| | M71 | M91 |
|---|---|---|
| **Seat Width Range:** | 16 - 20-inches | 16 - 22-inches |
| **Seat Depth Range:** | 16 - 20-inches | 16 - 22-inches |
| ***Seat-to-Floor Height:** | 18-1/2 - 20-1/2-inches (In 1/2-inch increments | 20 -21-inches (in 1/2-inch increments) |
| **Overall Width:** | | |
| Without Joystick: | 24-inches | 26-inches |
| With Joystick and TRSS: | 26-inches | 27-inches |
| **Overall Height:** | 35-3/4 - 43-3/4-inches | 37 - 45-inches |
| **Over all Length with** | | |
| Front riggings: | 43-1/4-inches | 44-inches |
| **Back Height Range:** | 16 - 24-inches | 16 - 24-inches |
| **Back Angle Range (ASBA):** | 95° - 120° in 6-1/4° increments | 95° - 120° in 6-1/4° increments |
| **Tilt Range:** | | |
| 0° Seat Pan Angle: | 0° - 45° | 0° - 45° |
| 5° Seat Pan Angle: | 5°- 50° | 5°- 50° |
| **Turning Radius With Front Riggings:** | 28-inches | 27-1/2-inches |
| **Maximum Speed:** | 3 MPH | 6-1/2 MPH |
| **Incline Capability:** | 9° | 9° |
| **Weight of Power Tilt Only:** | 45lbs. | 45lbs. |
| **Armrests:** | Adjustable Angle, Height, and Depth | Adjustable Angle, Height, and Depth |
| **Weight Limit of Wheelchair With Power Tilt Only:** | 250lbs. | 250lbs. |

** NOTE: The seat-to-floor heights are based on 18-inch deep seat with 0° (±1°) seat pan angle and pneumatic tires or flat free inserts. Seat-to-floor height measured from the front edge of seat to floor. All heights are measured with properly inflated new tires. These heights can vary ±1/4-inch due to tire wear.*

| *This Procedure Includes the Following:* |
| --- |
| *Controller Settings/Repair or Service Information* |
| *Operating Information* |
| *Safety/Handling of Wheelchairs* |
| *Label Location* |

# CONTROLLER SETTINGS/REPAIR OR SERVICE

**WARNING**

**Set-up of the Electronic Control Unit is to be performed ONLY by a qualified technician. The final tuning adjustments of the controller may affect other activities of the wheelchair. Reprogramming the controller reduces the stability/controllability of the wheelchair. Other program settings could cause the wheelchair to tip over resulting in serious injury to the user and/or damage to the surrounding property. IF ANY INDIVIDUAL OTHER THAN A QUALIFIED TECHNICIAN PERFORMS ANY WORK ON THESE UNITS, THE WARRANTY IS VOID.**

# OPERATING INFORMATION

**GENERAL WARNINGS**

**Performance adjustments should only be made by professionals of the healthcare field or persons fully conversant with this process and the driver's capabilities. Incorrect settings could cause injury to the driver, bystanders, damage to the chair and to surrounding property.**

**After the wheelchair has been set-up, check to make sure that the wheelchair performs to the specifications entered during the set-up procedure. If the wheelchair does NOT perform to specifications, turn the wheelchair OFF immediately and reenter set-up specifications. Repeat this procedure until the wheelchair performs to specifications.**

**ALWAYS shift your weight in the direction you are turning. DO NOT shift your weight in the opposite direction of the turn. Shifting your weight in the opposite direction of the turn may cause the inside drive wheel to lose traction and the wheelchair to tip over.**

**DO NOT shift your weight or sitting position toward the direction you are reaching as the wheelchair may tip over.**

**To determine and establish your particular safety limits, practice bending, reaching and transferring activities in several combinations in the presence of a qualified health professional BEFORE attempting active use of the seating system/wheelchair.**

**DO NOT attempt to reach objects if you have to move forward in the seat.**

**DO NOT attempt to reach objects if you have to pick them up from the floor by reaching down between your knees.**

## GENERAL WARNINGS

**DO NOT lean over the top of the back upholstery to reach objects from behind as this may cause the seating system/wheelchair to tip over.**

**DO NOT operate the seating system while on an incline.**

**DO NOT operate the seating system while the wheelchair is moving.**

**NEVER operate the wheelchair while in any tilted position over 20° RELATIVE TO THE VERTICAL POSITION. If the drive lock-out does not stop the wheelchair from operating in a tilt position 20° RELATIVE TO THE VERTICAL POSITION, DO NOT operate the wheelchair. DO NOT attempt to adjust the drive lock-out. Have the wheelchair serviced by a qualified technician.**

**DO NOT operate tilt seat around children.**

**Keep hands and feet out from underneath tilt seat - otherwise injury may result.**

**DO NOT tip the seating system/wheelchair without assistance.**

**DO NOT store items under seat - interference with seat latch may result.**

**DO NOT use an escalator to move a seating system/wheelchair between floors. Serious bodily injury may occur.**

**Before attempting to transfer in or out of the seating system/wheelchair, every precaution should be taken to reduce the gap distance. Turn both casters toward the object you are transferring onto. Also be certain the power is OFF and wheel locks are engaged to prevent the wheels from moving.**

**DO NOT engage or disengage the motor locks until the power is in the OFF position.**

**DO NOT operate on roads, streets or highways.**

**DO NOT climb, go up or down ramps or traverse slopes greater than 9°.**

**DO NOT attempt to move up or down an incline with a water, ice or oil film.**

**DO NOT attempt to drive over curbs or obstacles. Doing so may cause your seating system/wheelchair to turn over and cause bodily harm or damage to the seating system/wheelchair.**

**DO NOT use parts, accessories, or adapters other than those authorized by Invacare. Otherwise, the warranty is void.**

**DO NOT leave the power ON when entering or exiting your seating system/wheelchair.**

## GENERAL WARNINGS

**DO NOT attempt to lift the seating system/wheelchair by lifting on any removable (detachable) parts. Lifting by means of any removable (detachable) parts of a seating system/wheelchair may result in injury to the user or damage to the seating system/wheelchair.**

**DO NOT stand on the frame of the seating system/wheelchair.**

**Anti-tippers MUST BE attached at all times.**

**DO NOT use the footplates as a platform. When getting in or out of the seating system/wheelchair, make sure that the footplates are in the upward position or swing footrests towards the outside of the seating system/ wheelchair.**

**ALWAYS wear your seat positioning strap.**

## GROUNDING INSTRUCTIONS

**DO NOT, under any circumstances, cut or remove the round grounding prong from any plug used with or for Invacare products. Some devices are equipped with three-prong (grounding) plugs for protection against possible shock hazards and fire. Where a two-prong wall receptacle is encountered, it is the personal responsibility and obligation of the customer to contact a qualified electrician and have the two-prong receptacle replaced with a properly grounded three-prong wall receptacle in accordance with the National Electrical Code. If you must use an extension cord, use ONLY a three-wire extension cord having the same or higher electrical rating as the device being connected. In addition, Invacare has placed RED/ORANGE WARNING TAGS on some equipment. DO NOT remove these tags.**

## RAIN TEST

**INVACARE has tested its power wheelchairs in accordance with ISO 7176 Part 9 "Rain Test". This provides the end user or his/her assistant sufficient time to remove his/her power wheelchair from a rain storm and retain wheelchair operation.**

**DO NOT leave power wheelchair in a rain storm of any kind.**

**DO NOT use power wheelchair in a shower.**

**DO NOT store power wheelchair in a damp area for an extended period of time.**

**Direct exposure to excessive rain or dampness may cause the chair to malfunction electrically and mechanically; may cause the chair to prematurely rust or may damage the upholstery.**

**Check to ensure that the red and black battery terminal caps are secured in place, joystick boot is NOT torn or cracked where water can enter and that all electrical connections are secure at all times.**

**DO NOT use the joystick if the boot is torn or cracked. If the joystick boot becomes torn or cracked, replace IMMEDIATELY.**

## WEIGHT TRAINING

**Invacare DOES NOT recommend the use of its wheelchairs as a weight training apparatus. Invacare wheelchairs have NOT been designed or tested as a seat for any kind of weight training. If occupant uses said wheelchair as a weight training apparatus, INVACARE SHALL NOT BE LIABLE FOR BODILY INJURY AND THE WARRANTY IS VOID.**

## WEIGHT LIMITATION

**The power tilt only weight limit is 250 lbs. reguardless of wheelchair weight limit.**

## ELECTROMAGNETIC INTERFERENCE (EMI)

**CAUTION: IT IS VERY IMPORTANT THAT YOU READ THIS INFORMATION REGARDING THE POSSIBLE EFFECTS OF ELECTROMAGNETIC INTERFERENCE ON YOUR POWERED WHEELCHAIR.**

**ELECTROMAGNETIC INTERFERENCE (EMI) FROM RADIO WAVE SOURCES**

**Powered wheelchairs and motorized scooters (in this text, both will be referred to as powered wheelchairs) may be susceptible to electromagnetic interference (EMI), which is interfering electromagnetic energy (EM) emitted from sources such as radio stations, TV stations, amateur radio (HAM) transmitters, two way radios, and cellular phones. The interference (from radio wave sources) can cause the powered wheelchair to release its brakes, move by itself, or move in unintended directions. It can also permanently damage the powered wheelchair's control system. The intensity of the interfering EM energy can be measured in volts per meter (V/m). Each powered wheelchair can resist EMI up to a certain intensity. This is called its "immunity level." The higher the immunity level, the greater the protection. At this time, current technology is capable of achieving at least a 20 V/m immunity level, which would provide useful protection from the more common sources of radiated EMI. This powered wheelchair model as shipped, MKIV - RII electronics, has an immunity level of unknown.**

**There are a number of sources of relatively intense electromagnetic fields in the everyday environment. Some of these sources are obvious and easy to avoid. Others are not apparent and exposure is unavoidable. However, we believe that by following the warnings listed, your risk to EMI will be minimized.**

## ELECTROMAGNETIC INTERFERENCE (EMI)

**The sources of radiated EMI can be broadly classified into three types:**

1) **Hand-held Portable transceivers (transmitters-receivers with the antenna mounted directly on the transmitting unit. Examples include: citizens band (CB) radios, "walkie talkie," security, fire, And police transceivers, cellular telephones, and other personal communication devices. **NOTE: Some cellular telephones and similar devices transmit signals while they are ON, even when not being used;**

2) **Medium-range mobile transceivers, such as those used in police cars, fire trucks, ambulances, and taxis. These usually have the antenna mounted on the outside of the vehicle; and**

3) **Long-range transmitters and transceivers, such as commercial broadcast transmitters (radio and TV broadcast antenna towers) and amateur (HAM) radios.**

***NOTE: Other types of hand-held devices, such as cordless phones, laptop computers, AM/FM radios, TV sets, CD players, cassette players, and small appliances, such as electric shavers and hair dryers, so far as we know, are not likely to cause EMI problems to your powered wheelchair.***

## POWERED WHEELCHAIR ELECTROMAGNETIC INTERFERENCE (EMI)

**Because EM energy rapidly becomes more intense as one moves closer to the transmitting antenna (source), the EM fields from hand-held radio wave sources (transceivers) are of special concern. It is possible to unintentionally bring high levels of EM energy very close to the powered wheelchair's control system while using these devices. This can affect powered wheelchair movement and braking. Therefore, the warnings listed are recommended to prevent possible interference with the control system of the powered wheelchair.**

**Electromagnetic interference (EMI) from sources such as radio and TV stations, amateur radio (HAM) transmitters, two-way radios, and cellular phones can affect powered wheelchairs and motorized scooters. Following the warnings listed below should reduce the chance of unintended brake release or powered wheelchair movement which could result in serious injury.**

1) **Do not operate hand-held transceivers (transmitters receivers), such as citizens band (CB) radios, or turn ON personal communication devices, such as cellular phones, while the powered wheelchair iS turned ON;**
2) **Be aware of nearby transmitters, such as radio or TV stations, and try to avoid coming close to them;**
3) **If unintended movement or brake release occurs, turn the powered wheelchair OFF as soon as it is safe;**
4) **Be aware that adding accessories or components, or modifying the powered wheelchair, may make it more susceptible to EMI (Note: There is no easy way to evaluate their effect on the overall immunity of the powered wheelchair); and**
5) **Report all incidents of unintended movement or brake release to the powered wheelchair manufacturer, and note whether there is a source of EMI nearby.**

## IMPORTANT INFORMATION

1) **20 volts per meter (V/m) is a generally achievable and useful immunity level against EMI (as of May 1994) (the higher the level, the greater the protection);**
2) **The immunity level of this product is unknown.**

# SAFETY/HANDLING OF WHEELCHAIRS

"Safety and Handling" of the wheelchair requires the close attention of the wheelchair user as well as the assistant. This manual points out the most common procedures and techniques involved in the safe operation and maintenance of the wheelchair. It is important to practice and master these safe techniques until you are comfortable in maneuvering around the frequently encountered architectural barriers.

Use this information only as a "basic" guide. The techniques that are discussed on the following pages have been used successfully by many.

Individual wheelchair users often develop skills to deal with daily living activities that may differ from those described in this manual. Invacare recognizes and encourages each individual to try what works best for him/her in overcoming architectural obstacles that they may encounter, however, ALL WARNINGS and CAUTIONS given in this manual MUST be followed. Techniques in this manual are a starting point for the new wheelchair user and assistant with "safety" as the most important consideration for all.

## STABILITY AND BALANCE

**WARNING**

**ALWAYS wear your seat positioning strap.**

To assure stability and proper operation of your wheelchair, you must at all times maintain proper balance. Your wheelchair has been designed to remain upright and stable during normal daily activities as long as you do not move beyond the center of gravity. DO NOT lean forward out of the wheelchair any further than the length of the armrests.

## COPING WITH EVERYDAY OBSTACLES

Coping with the irritation of everyday obstacles can be alleviated somewhat by learning how to manage your wheelchair. Keep in mind your center of gravity to maintain stability and balance.

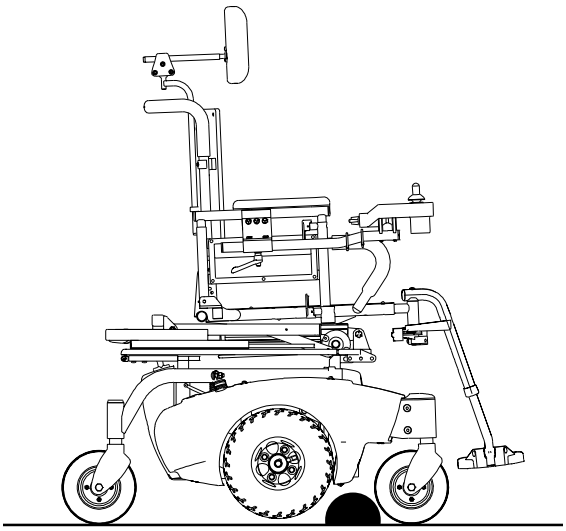
While the walking beam allows to traverse up to a 2-inch (M71) or a 3-inch (M91) bump or threshold, stopping after the wheels cross the bump poses a problem. The chair cannot reverse over the bump at this point. Continue forward and then turn around.

While the M91 and M71 are designed for use primarily in and around the home, the provider should determine whether this chair is suitable for the actual environment the chair will be used.

*Do not go down ramp at full speed. Some seat/back positions will cause wheelchair to feel unstable.*

**CAUTION**

**Be aware of condition of ramp. Traction will be diminished/ nonexistent on a slippery surface. Proceed with caution.**



## A NOTE TO WHEELCHAIR ASSISTANTS

When assistance to the wheelchair user is required, remember to use good body mechanics. Keep your back straight and bend your knees whenever tilting wheelchair or traversing curbs, or other impediments.

Also, be aware of detachable parts such as arms or the footboard. These must NEVER be used to move the wheelchair or as lifting supports, as they may be inadvertently released, resulting in possible injury to the user and/or assistant(s).

When learning a new assistance technique, have an experienced assistant help you before attempting it alone.

## LIFTING/STAIRWAYS

**WARNING**

**DO NOT attempt to move an occupied power wheelchair between floors using a stairway. Use an elevator to move an occupied power wheelchair between floors. If moving a power wheelchair between floors by means of a stairway, the occupant MUST be removed and transported independently of the power wheelchair.**

**Extreme caution is advised when it is necessary to move an UNOCCUPIED power wheelchair up or down the stairs. Invacare recommends using two (2) assistants and making thorough preparations.**

**Make sure to use ONLY secure, nondetachable parts for hand-hold supports.**

**It is strongly recommended to lift the wheelchair only by the rear frame and the front forks - otherwise injury or damage may occur.**

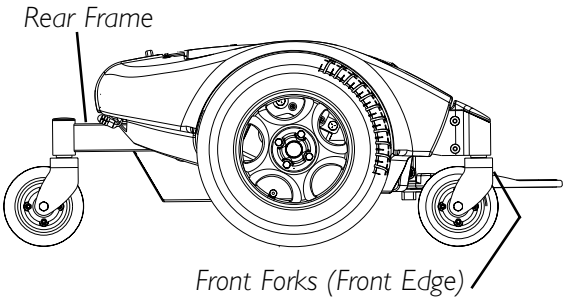
**DO NOT attempt to lift the wheelchair by any removable (detachable) parts. Lifting by means of any removable (detachable) parts of a wheelchair may result in injury to the user or damage to the wheelchair.**

**The weight of the wheelchair base with batteries and without the user is 318 lbs. Use proper lifting techniques (lift with your legs) to avoid injury.**

**Follow this procedure for moving the wheelchair between floors when an elevator is NOT available or lifting the wheelchair is necessary:**

*NOTE: When using a stairway to move the wheelchair, seat and any accessories, move all wheelchair components away from the stairway prior to reassembly.*

1. Remove the occupant from the wheelchair.
2. Remove the front riggings and any accessories.
3. Bend your knees and keep your back straight.
4. Using the rear frame and the front edge of the front forks as hand hold supports, transfer the wheelchair base to desired location.
5. Using non-removable (nondetachable) parts, transfer the seat and any accessories to desired location.
6. Reassemble the wheelchair.




**ESCALATORS? SORRY!**

**DO NOT use an escalator to move a wheelchair between floors. Serious bodily injury may occur.**

## TRANSFERRING TO AND FROM OTHER SEATS

**WARNING**

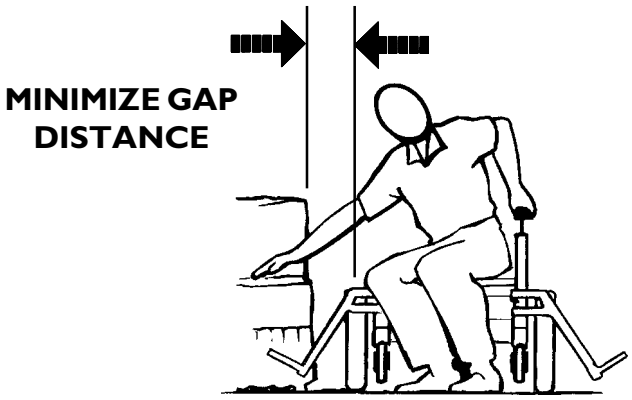
**ALWAYS turn the wheelchair power OFF and engage the Motor Release Levers to prevent the wheels from moving BEFORE attempting to transfer in or out of the wheelchair. Also, make sure every precaution is taken to reduce the gap distance by aligning both the front AND rear casters parallel with the object you are transferring onto.**

**CAUTION**

**When transferring, position yourself as far back as possible in the seat. This will prevent broken screws, damaged upholstery and the possibility of the wheelchair tipping forward.**

*NOTE: This activity may be performed independently provided you have adequate mobility and upper body strength.*

1. Position the wheelchair as close as possible along side the seat to which you are transferring, with the rear casters pointing away from it.
2. After the wheelchair is positioned properly for transfer, verify that the Motor Release Levers are engaged. Refer to ENGAGING/DISENGAGING MOTOR RELEASE LEVERS in the owner's manual shipped with wheelchair.
3. Flipback or remove arm on side of wheelchair you are transferring from.
4. Shift body weight into seat with transfer.




During independent transfer, little or no seat platform will be beneath you. Use a transfer board if at all possible.

## PERCENTAGE OF WEIGHT DISTRIBUTION

**WARNING**

**DO NOT attempt to reach objects if you have to move forward in the seat or pick them up from the floor by reaching down between your knees.**

**Many activities require the wheelchair user to reach, bend and transfer in and out of the wheelchair. These movements will cause a change to normal balance, center of gravity, and weight distribution of the wheelchair. To determine and establish your particular safety limits, practice bending, reaching and transferring activities in several combinations in the presence of a qualified healthcare professional BEFORE attempting active use of the wheelchair.**

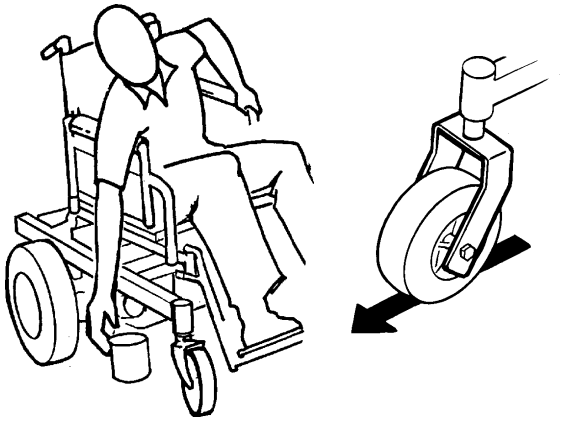
**Proper positioning is essential for your safety. When reaching, leaning, bending or bending forward, it is important to use the casters as a tool to maintain stability and balance.**

## REACHING, LEANING, BENDING AND BENDING - FORWARD

Position the front AND rear casters so that they are extended as far rearward as possible and engage Motor Release Levers.

**WARNING**

**DO NOT attempt to reach objects if you have to move forward in the seat or pick them up from the floor by reaching down between your knees.**



## REACHING, BENDING - BACKWARD

**WARNING**

**DO NOT lean over the top of the back upholstery. This will change your center of gravity and may cause you to tip over.**

Position wheelchair as close as possible to the desired object. Point the front AND rear casters rearward to create the longest possible wheelbase. Reach back only as far as your arm will extend without changing your sitting position.

| *This Procedure Includes the Following:* |
|---|
| *Safety Inspection Checklist* |
| *Troubleshooting Guide* |

## SAFETY INSPECTION CHECKLIST

Initial adjustments should be made to suit your personal body structure and preference. Thereafter follow these maintenance procedures.

*NOTE: Refer to the wheelchair owner's manual for a complete safety inspection checklist on the base.*

| ITEM | INITIALLY | INSPECT/ ADJUST MONTHLY | INSPECT/ ADJUST PERIODICALLY |
|---|---|---|---|
| **ELECTRICAL CONNECTIONS** | | | |
| ● Make sure all electrical connections are secure. | X | X | |
| ● Check limit switch position. | X | | X |
| **DRIVE LOCK-OUT** | | | |
| ● Make sure drive lock-out operates properly. | X | | X |
| **TILT MECHANISM** | | | |
| ● Make sure actuator operates smoothly and properly. | X | X | |
| ● Make sure actuator mechanism and tilt tracks are clean. | X | | X |
| **CLOTHING GUARDS** | | | |
| ● Ensure all fasteners are secure. | X | | X |
| **ARMS** | | | |
| ● Secure but easy to release; adjustment levers engage properly. | X | | X |
| ● Adjustable height arms operate and lock securely. | X | | X |
| **ARMRESTS** | | | |
| ● Inspect for rips in upholstery. | X | | X |
| ● Armrest pad sits flush against arm tube. | X | | X |
| **SEAT AND BACK CUSHIONS** | | | |
| ● Inspect for rips. | X | | X |
| **CLEANING** | | | |
| ● Clean cushions and armrests. | X | | X |

*NOTE: Every six (6) months or as necessary take your wheelchair to a qualified dealer for a thorough inspection and servicing. Regular cleaning will reveal loose or worn parts and enhance the smooth operation of your wheelchair. To operate properly and safely, your wheelchair must be cared for just like any other vehicle. Routine maintenance will extend the life and efficiency of your wheelchair.*

# TROUBLESHOOTING

*NOTE: Refer to the wheelchair owner's manual for complete mechanical and electrical troubleshooting guides on the base.*

*NOTE: Refer to the individual CONTROLLER MANUAL supplied with each wheelchair for additional troubleshooting information and explanation of error codes.*

| SYMPTOM | PROBABLE CAUSE | SOLUTIONS |
|---|---|---|
| Wheelchair Power ON but does not drive. | System tilted beyond drive lock-out angle. | **Tilt to neutral (upright) position.** Contact Dealer/ Invacare for Service. |
| Seating system not functioning. | Low Batteries.<br>Faulty electrical connection.<br>Blown Fuse. | Charge batteries.<br>Check all connections.<br>Replace fuse. |

| *This Procedure Includes the Following:* |
| --- |
| *Operating The Power Tilt Only* |
| *Tilting The Seat Assembly* |

# OPERATING THE POWER TILT ONLY (FIGURE 1)

**WARNING**

**NEVER operate the wheelchair while in any tilted position over 20° RELATIVE TO THE VERTICAL POSITION. If the drive lock-out does not stop the wheelchair from operating in a tilt position 20° RELATIVE TO THE VERTICAL POSITION, DO NOT operate the wheelchair. Have the wheelchair serviced by a dealer or qualified technician.**

## A NOTE ABOUT DRIVE LOCK-OUT

Drive lock-out is a feature designed to prevent the wheelchair from being driven after the seating system has been tilted beyond 20°*. When the drive lock-out feature has been activated, the LED on the single function toggle switch will light.

**NOTE: 20° of tilt can be any combination of back angle and tilt.*

*NOTE: The tilt range is from 0° to 45° with a 0° seat-to- floor angle and 5° to 50° with a 5° seat-to-floor angle.*

## INCREASING THE TILT ANGLE

1. Make sure the wheelchair is on a level surface.
2. Push the single function toggle switch forward towards the front of the wheelchair until the desired angle is achieved.

## DECREASING THE TILT ANGLE

1. Pull the single function toggle switch back towards the rear of the wheelchair until the desired angle is achieved.

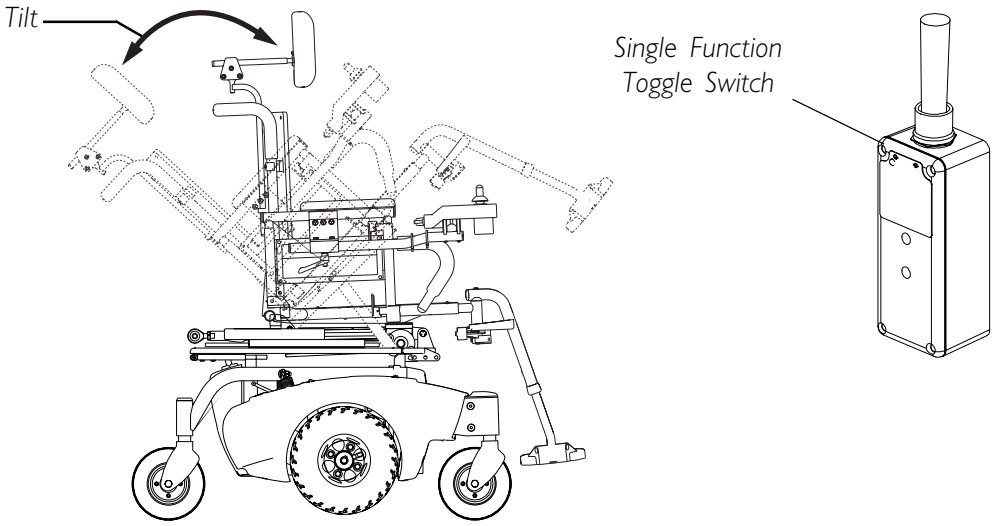



**FIGURE 1 - OPERATING THE TILT FUNCTION**

# TILTING THE SEAT ASSEMBLY (FIGURE 2)

*NOTE: Removing the seat is not necessary to access to the battery compartment on wheelchairs equipped with a power tilt only seating system. The seat assembly with power tilt only tilts back and propped in place to provide access to the batteries and underside of the seat.*

**WARNING**

**Make sure power to the wheelchair is OFF before performing this procedure.**

**NEVER leave the seat assembly in the UP/OPEN position unless necessary to preform a procedure on the wheelchair - otherwise injury or damage may result.**

**After ANY adjustments, repair or service and BEFORE use, make sure all attaching hardware is tightened securely - otherwise injury or damage may result.**

## TILTING THE SEAT ASSEMBLY BACK

1. Place the wheelchair in a well ventilated area where work can be performed without risking damage to carpeting or floor covering.
2. Verify the joystick ON/OFF switch is in the OFF position and disconnect joystick cable.
3. Remove front rigging. Refer to owner's manual shipped with wheelchair.
4. Remove the two (2) detent pins securing the power tilt only frame to the front seat posts as shown in DETAIL "A" OF FIGURE 2.
5. Firmly grasp the front edge of the seat assembly, slowly tilt the seat assembly BACK into the UP/OPEN position.
6. Remove prop rod from the clip located on the power tilt only frame and engage the prop rod end in to the support bracket and shown in DETAIL "B" OF FIGURE 2.
7. Gently allow weight of seat assembly to be supported by the prop rod.

*NOTE: Only leave the Seat assembly in the UP/OPEN position while performing any necessary procedures. Always lower the seat assembly to the DOWN/CLOSED position when not servicing the wheelchair.*

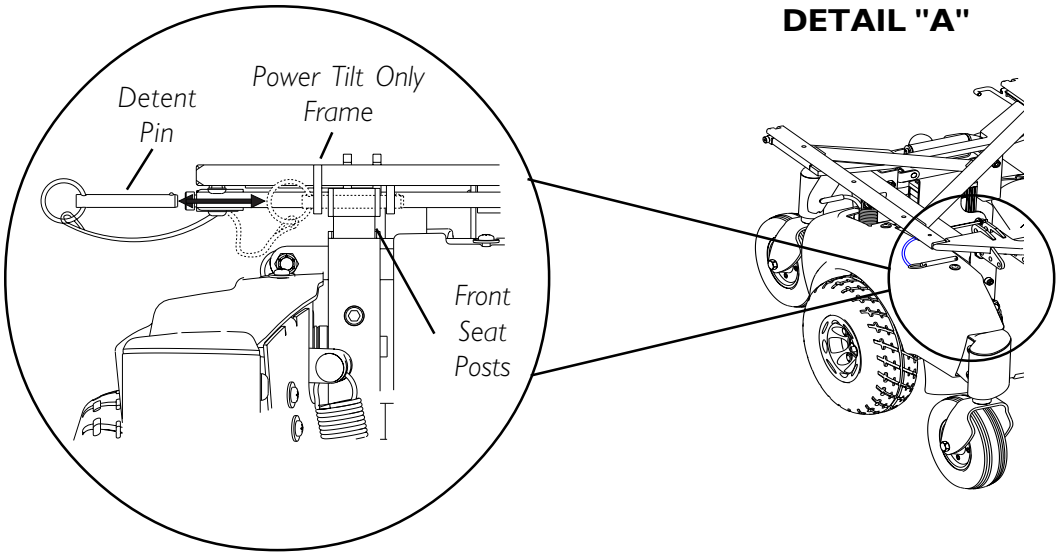
## TILTING THE SEAT ASSEMBLY FORWARD

1. Using one hand, firmly grasp the front edge of the seat assembly and lift until seat assembly is no longer supported by the prop rod.
2. Disengage prop rod from the support bracket and secure into clip as shown in DETAIL "B" of FIGURE 2.
3. Using both hands, slowly tilt the seat assembly FORWARD into the DOWN/CLOSED position.

**WARNING**

**Ensure the two (2) detent pins are fully engaged and the power tilt only frame is securely locked in place before use - otherwise injury or damage may result.**

4. Insert the two (2) detent pins through both the power tilt only frame and the two (2) front seat posts as shown in DETAIL "A" of FIGURE 2.



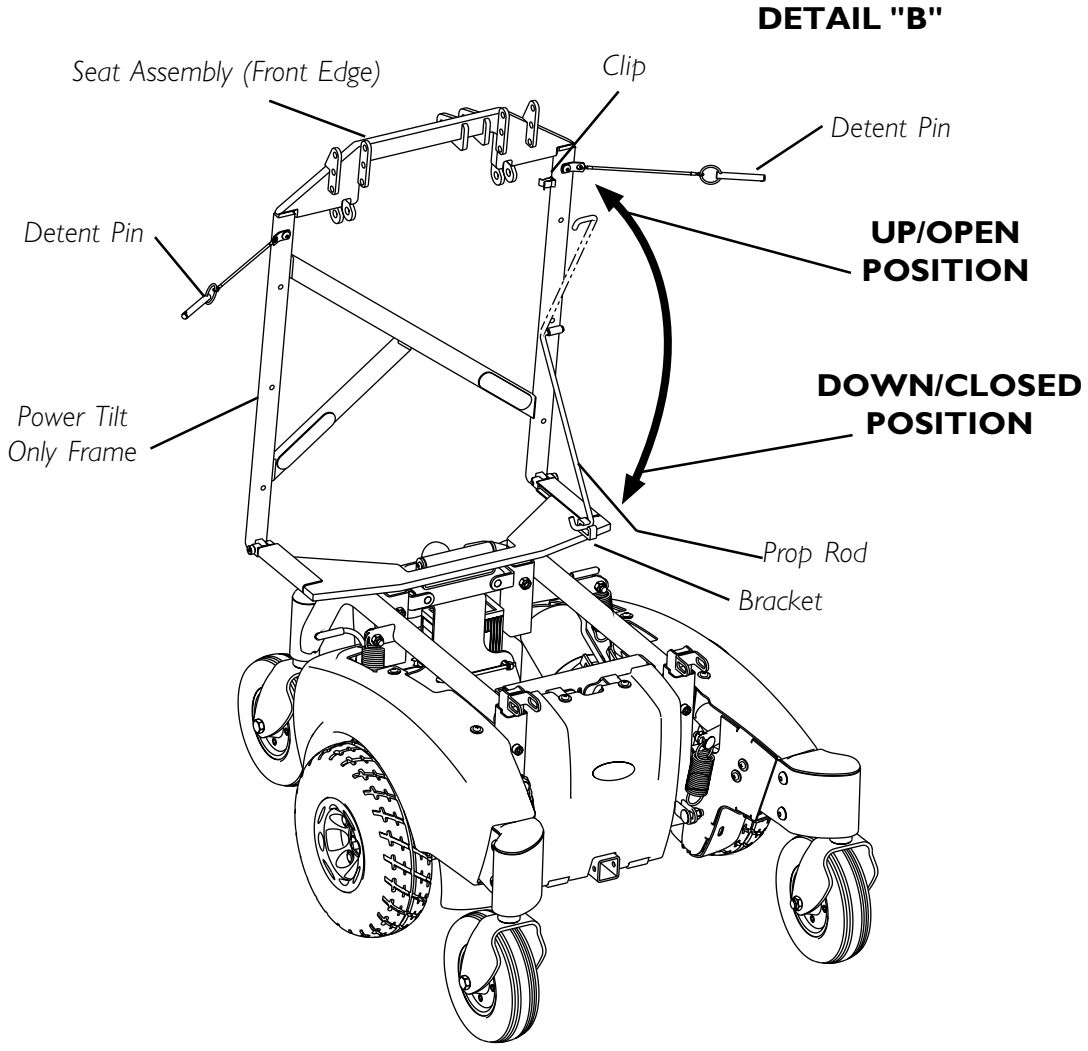




**FIGURE 2 - TILTING THE SEAT ASSEMBLY**

| *This Procedure Includes the Following:* |
| --- |
| *Charging Batteries* |

# CHARGING BATTERIES

**WARNING**

**NEVER attempt to recharge the batteries by attaching cables directly to the battery terminals.**

**DO NOT attempt to recharge the batteries and operate the wheelchair at the same time.**

**DO NOT attempt to recharge the batteries when the wheelchair has been exposed to ANY type of moisture.**

**DO NOT attempt to recharge the batteries when the wheelchair is outside.**

**DO NOT sit in the wheelchair while recharging the batteries.**

**READ and CAREFULLY follow the manufactures instructions for each charger (supplied or purchased). If charging instructions are not supplied, consult a qualified technician for proper procedures.**

**CAUTION**

**New batteries MUST be fully charged prior to initial use of the wheelchair.**

**ALWAYS charge new batteries before initial use or battery life will be reduced.**

**As a general rule, you should recharge your batteries as frequently as possible to assure the longest possible life and to minimize required charging time. Plan to recharge them when you do not anticipate using the wheelchair.**

**There are some basic concepts which will help you understand this automatic process.**

The amount of electrical current drawn within a given time to charge a battery is called “charge rate”. If, due to usage, the charge stored in the battery is low, the charge rate is high. As a charge builds up, the charge rate is reduced, and the battery charger rate decreases to a "trickle charge".

*NOTE: If the batteries need to be charged more often or take longer to charge than normal, they may need to be replaced. Contact a qualified technician.*

*NOTE: The batteries can be charged using the on-board battery charger OR by plugging an independent battery charger into the port located on the front of the MKIV joystick.*

## BATTERY CHARGER OPERATION

**WARNING**

**READ and CAREFULLY follow the manufactures instructions for each charger (supplied or purchased). If charging instructions are not supplied, consult a qualified technician for proper procedures.**

**NEVER leave the charger unattended when the circuit breaker (charger) is tripping ON and OFF. Immediately unplug charger and discontinue use. Consult a qualified technician.**

**Three (3) prong to two (2) prong adapters should not be used. Use of three (3) prong addapters can result in improper grounding and present a shock hazard to the user.**

## CHARGING USING AN INDEPENDENT CHARGER (FIGURE 1)

*NOTE: The charger port located on the FRONT of the joystick requires the use of an independent charger.*

**WARNING**

**READ and CAREFULLY follow the individual instructions for each charger (supplied or purchased). If charging instructions are not supplied, consult a qualified technician for proper procedures.**

**CAUTION**

**DO NOT use an independent charger rated for over 8 amps. Otherwise, damage may occur.**

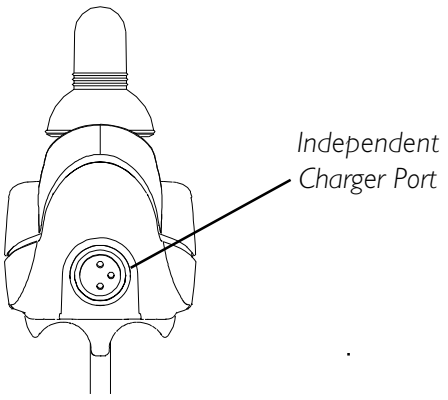
**Required Items:**

| MODEL | Battery Charger | * Power Cord |
|---|---|---|
| M91 and M71 | Supplied | Supplied |

** NOTE: AC power cord (3-prong plug, 15 ampere current rating; industrial type)*

1. Perform one of the following:
   A. Wheelchair with RII JOYSTICK:
      - Attach the battery charger connector to the charger port on the FRONT of the joystick.
   B. Wheelchair with "A" JOYSTICK (MKIV electronics):
      - Attach the battery charger connector to the charger port as shown in FIGURE 1.
2. Plug the charger's AC power cord, or extension, into the grounded 110-volt wall outlet.
3. Switch Charger ON.
4. Wait until charging is complete.
5. When charging is compleate, switch charger off and disconect from wall outlet and wheelchair.

**RII JOYSTICK**




**"A" JOYSTICK (MARK IV ELECTRONICS)**

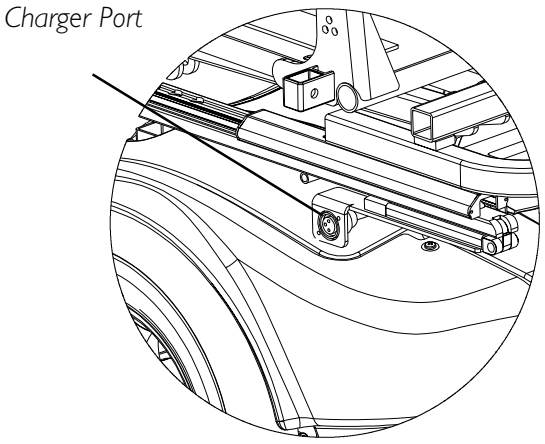



**FIGURE 1 - CHARGING USING AN INDEPENDENT CHARGER**

| *This Procedure Includes the Following:* |
| --- |
| ***Adjusting The Seat Height*** |
| ***Adjusting The Seat Position*** |

## ADJUSTING THE SEAT HEIGHT (FIGURE 1)

*NOTE: The M91 seat assembly can be adjusted to three (3) height positions in 1/2-inch increments.*

*NOTE: The M71 seat assembly can be adjusted to five (5) height positions in 1/2-inch increments.*

**WARNING**

**DO NOT attempt to adjust the seat height. This procedure MUST be performed by a qualified technician.**

**Invacare recommends using a assistant when performing this procedure - otherwise injury or damage may result.**

1. Tilt seat assembly BACK into the UP/OPEN position. Refer to TILTING THE SEAT ASSEMBLY in SECTION 3 of this owners manual.

*NOTE: M71 ONLY - It is necessary to remove the front shroud to reach the locknuts securing the front seat posts to the base frame. Refer to the owner's manual shipped with wheelchair.*

**WARNING**

**The front seat posts and rear seat support assembly MUST be adjusted to the same height before use - otherwise injury or damage may result.**

2. Perform the following on one (1) of the front seat posts at a time:
   A. Remove the mounting screw and locknut securing one (1) of the front seat posts to the support tube.
   B. Raise/lower the seat post to the desired height adjustment as shown in FIGURE 1.
   C. Reinstall mounting screw and locknut securing the front seat post to the support tube. Securely tighten.
3. Repeat STEP 2 for the remaining front seat post.

*NOTE: It may be necessary for an assistant to lift UP on the seat assembly while performing STEPS 4-7.*

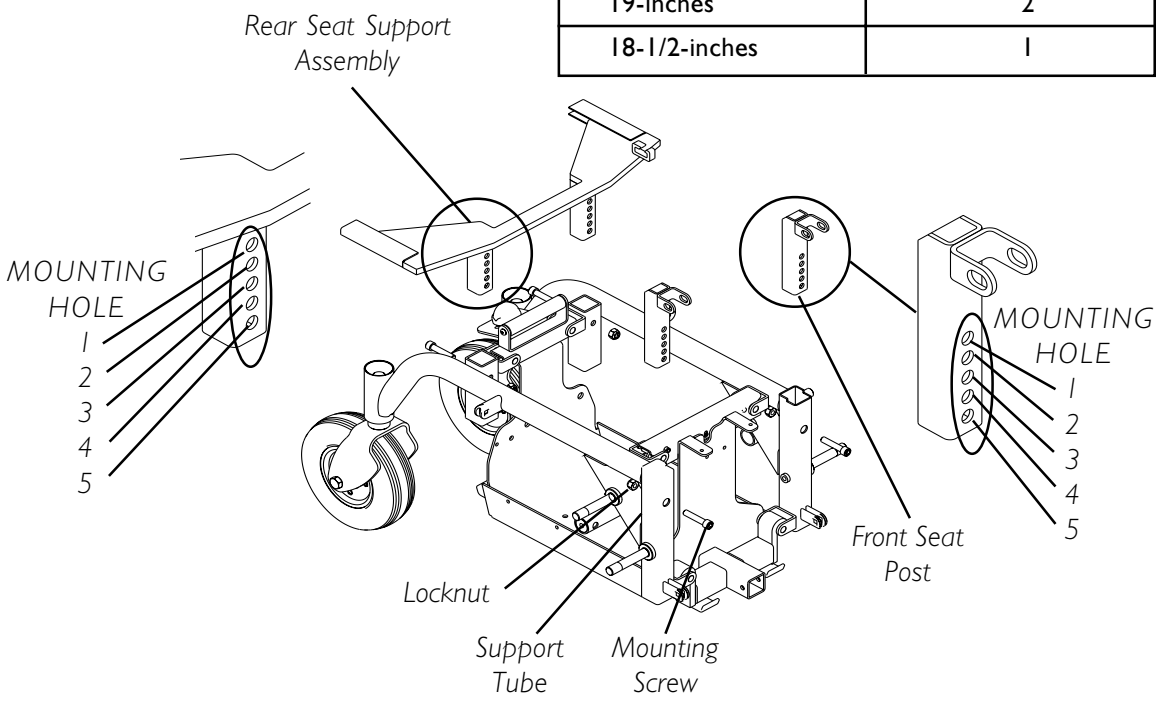
4. Remove the two (2) mounting screws and locknuts securing the rear seat support assembly to the support tube.
5. Raise/lower the rear seat support assembly to the desired height adjustment according to the chart in FIGURE 1.
6. Reinstall the two (2) mounting screws and locknuts securing the rear seat support assembly to the support tube. Securely tighten.
7. Tilt seat assembly FORWARD into the DOWN/CLOSED position. Refer to TILTING THE SEAT ASSEMBLY in SECTION 3 of this owners manual.



removing/installing the

## M71 FRAME

| SEAT TO FLOOR HEIGHT | M71 MOUNTING HOLE |
|---|---|
| 20-1/2-inches | 5 |
| 20-inches | 4 |
| 19-1/2-inches | 3 |
| 19-inches | 2 |
| 18-1/2-inches | 1 |




## M91 FRAME

| SEAT TO FLOOR HEIGHT | M91 MOUNTING HOLE |
|---|---|
| 21-inches | 3 |
| 20-1/2-inches | 2 |
| 20-inches | 1 |

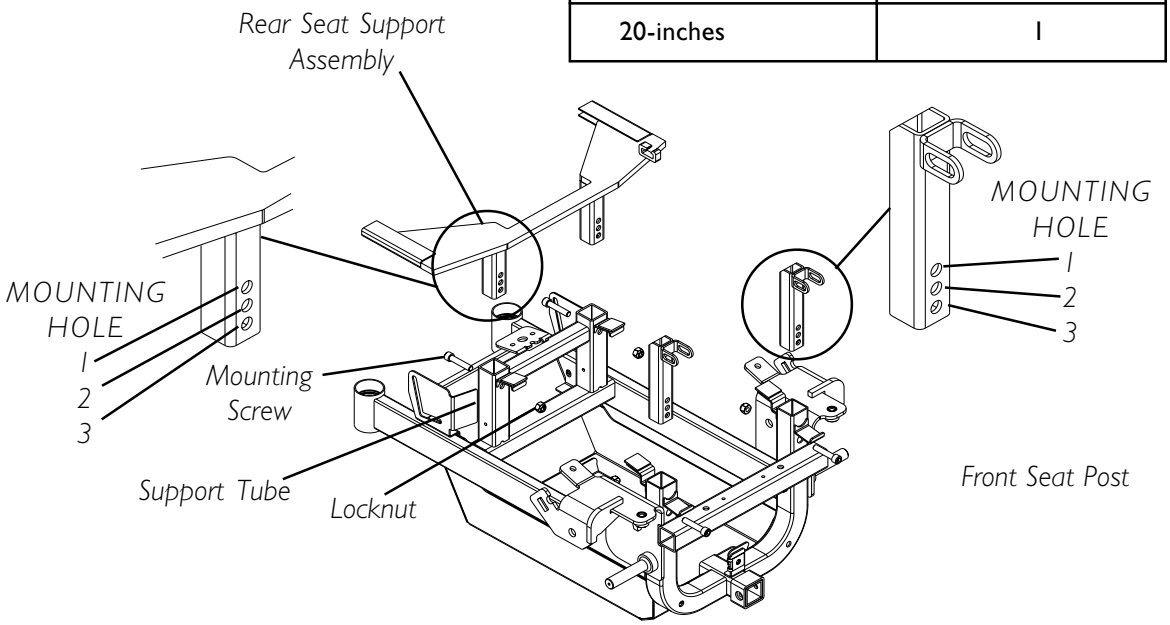



**FIGURE 6 - ADJUSTING THE SEAT HEIGHT**



seat assembly with power tilt only (figure x)

## ADJUSTING THE SEAT POSITION (FIGURE 2)

*NOTE: The seat can be adjusted to three (3) positions in 1/2-inch increments.*

**WARNING**

**DO NOT attempt to adjust the seat depth. This procedure MUST be performed by a qualified technician.**

**Invacare recommends using a assistant when preforming this procedure - otherwise injury or damage may result.**

1. Remove the two (2) detent pins securing the power tilt only frame to the front seat posts as shown in DETAIL "A" of FIGURE 2.
2. Remove the four (4) mounting screws securing the two seat frame hinges to the rear seat support assembly as shown in DETAIL "B" of FIGURE 2.
3. Tilt the seat assembly back until the power tilt only frame is clear of the front seat posts.
4. Align two (2) of the four (4) seat frame hinge mounting holes with the two (2) the rear seat support assembly mounting holes to the desired depth adjustment according to the chart in FIGURE 2.
5. Lower the seat assembly down onto the front seat posts.
6. Reinstall the four (4) mounting screws securing the two seat frame hinges to the rear seat support assembly.

**WARNING**

**Ensure the two (2) detent pins are fully engaged and the power tilt only frame is securely locked in place before use - otherwise injury or damage may result.**

7. Insert the two (2) detent pins through both the power tilt only frame and the two (2) front seat posts as shown in DETAIL "A" of FIGURE 2.

## M91 SEAT ADJUSTMENT POSITIONS

| SEAT TO FLOOR HEIGHT | M91 SEAT POSITION | | |
|---|---|---|---|
| | REAR | MIDDLE | FORWARD |
| 21-inches | OK | OK | OK |
| 20-1/2-inches | OK | OK | OK |
| 20-inches | As shipped with 20 and 22-inch Deep Seat | As shipped with 18-inch Deep Seat | As shipped with 16-inch Deep Seat |

## M71 SEAT ADJUSTMENT POSITIONS

| SEAT TO FLOOR HEIGHT | M71 SEAT POSITION | | |
|---|---|---|---|
| | REAR | MIDDLE | FORWARD |
| 20-1/2-inches | OK | OK | NO |
| 20-inches | OK | OK | NO |
| 19-1/2-inches | OK | OK | NO |
| 19-inches | OK | OK | NO |
| 18-1/2-inches | As shipped with 20-inch Deep Seat | As shipped with 18 And 16-inch Deep Seat | NO |

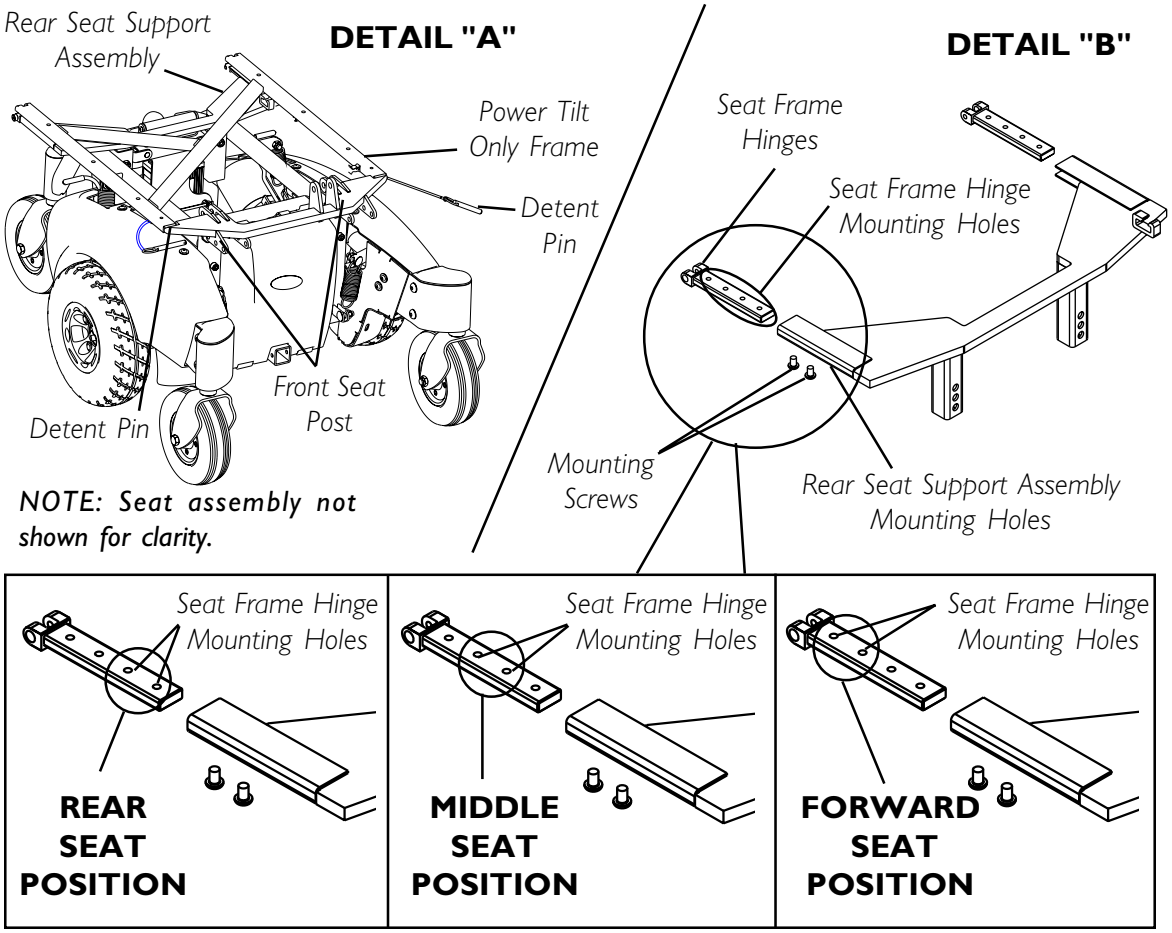



**FIGURE 2 - ADJUSTING THE SEAT POSITION**

# LIMITED WARRANTY

**PLEASE NOTE: THE WARRANTY BELOW HAS BEEN DRAFTED TO COMPLY WITH FEDERAL LAW APPLICABLE TO PRODUCTS MANUFACTURED AFTER JULY 4, 1975.**

**This warranty is extended only to the original purchaser/user of our products.**

**This warranty gives you specific legal rights and you may also have other legal rights which vary from state to state.**

**With regard to the original purchaser/user only, Invacare warrants its product to be free from defects in materials and workmanship for a period of:**

| | |
|---|---|
| **Three (3) Years** | **Seating System Frame** |
| **One (1) Year** | **Powered Seating Actuator** |
| **One (1) Year** | **All remaining components except for upholstered materials, padded materials, tires/wheels** |

**from date of purchase. If within such warranty period any such product shall be proven to be defective, such product shall be repaired or replaced, at Invacare's option. This warranty does not include any labor or shipping charges incurred in replacement part installation or repair of any such product. Invacare's sole obligation and your exclusive remedy under this warranty shall be limited to such repair and/or replacement.**

**For warranty service, please contact the dealer from whom you purchased your Invacare product. In the event you do not receive satisfactory warranty service, please write directly to Invacare at the address at the bottom of this page. Provide dealer's name, address, the product model number, date of purchase, indicate nature of the defect and, if the product is serialized, indicate the serial number. Do not return products to our factory without our prior consent.**

**LIMITATIONS AND EXCLUSIONS: THE FOREGOING WARRANTY SHALL NOT APPLY TO SERIAL NUMBERED PRODUCTS IF THE SERIAL NUMBER HAS BEEN REMOVED OR DEFACED, PRODUCTS SUBJECTED TO NEGLIGENCE, ACCIDENT, IMPROPER OPERATION, MAINTENANCE OR STORAGE, PRODUCTS MODIFIED WITHOUT INVACARE'S EXPRESS WRITTEN CONSENT INCLUDING, BUT NOT LIMITED TO, MODIFICATION THROUGH THE USE OF UNAUTHORIZED PARTS OR ATTACHMENTS; PRODUCTS DAMAGED BY REASON OF REPAIRS MADE TO ANY COMPONENT WITHOUT THE SPECIFIC CONSENT OF INVACARE, OR TO A PRODUCT DAMAGED BY CIRCUMSTANCES BEYOND INVACARE'S CONTROL, AND SUCH EVALUATION WILL BE SOLELY DETERMINED BY INVACARE. THE WARRANTY SHALL NOT APPLY TO PROBLEMS ARISING FROM NORMAL WEAR OR FAILURE TO ADHERE TO THESE INSTRUCTIONS.**

**THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IN LIEU OF ANY OTHER WARRANTIES WHATSOEVER, WHETHER EXPRESS OR IMPLIED, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, AND THE SOLE REMEDY FOR VIOLATIONS OF ANY WARRANTY WHATSOEVER, SHALL BE LIMITED TO REPAIR OR REPLACEMENT OF THE DEFECTIVE PRODUCT PURSUANT TO THE TERMS CONTAINED HEREIN. THE APPLICATION OF ANY IMPLIED WARRANTY WHATSOEVER SHALL NOT EXTEND BEYOND THE DURATION OF THE EXPRESS WARRANTY PROVIDED HEREIN. THE MANUFACTURER SHALL NOT BE LIABLE FOR ANY CONSEQUENTIAL OR INCIDENTAL DAMAGES WHATSOEVER.**

**THIS WARRANTY SHALL BE EXTENDED TO COMPLY WITH STATE/PROVINCIAL LAWS AND REQUIREMENTS.**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